MAINTENANCE BULLETIN

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ALFA COMPANY

4111 San Pedro St., Bldg. 1443
Port Hueneme, Ca. 93043-4410

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You are invited to send your ideas for improving maintenance procedures, suggestions for articles, or comments on material published in the Maintenance Bulletin. Just write to:

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STATEMENT OF CERTIFICATION

Distribution Statement A.
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Distribution is unlimited.
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RECALLS

CHRYSLER RECALL NO. 815 /NHTSA NO. 99V023
DODGE RAM 1995-1997
MANUFACTURE AUGUST 1994-AUGUST 1997
DEFECT: ON CERTAIN VAN AND WAGON MODEL VEHICLES, IF WATER OR ROAD SALT GETS ON THE INTERIOR FLOOR OF THE VEHICLE IN THE PROXIMITY OF THE AIR BAG ELECTRONIC CONTROL MODULE (AECM), THE AECM CAN CORRODE. THE RESULTING CORROSION CAN CAUSE THE DRIVER SIDE AIR BAG TO DEPLOY INADVERTENTLY. DEPLOYMENT OF THE AIR BAG WITHOUT WARNING COULD CAUSE A DRIVER TO LOSE VEHICLE CONTROL, INCREASING THE RISK OF A CRASH AND PERSONAL INJURY.
REMEDY: DEALERS WILL REPLACE THE AECM WITH AN AECM THAT IS SEALED FROM MOISTURE INTRUSION. OWNER NOTIFICATION IS EXPECTED TO BEGIN DURING MARCH 1999. OWNERS WHO DO NOT RECEIVE THE FREE REMEDY WITHIN A RESONABLE TIME SHOULD CONTACT CHRYSLER AT 1-800-992-1997.

CHRYSLER RECALL NO. 819/NHTSA NO. 99V024
DODGE RAM 3500 TRUCK 1994-1997
MANUFACTURE JULY 1993-OCTOBER 1996
DEFECT: ON MODEL 3500 LIGHT DUTY TRUCKS, OPERATION OF THE HEADLAMPS OVER AN EXTENDED PERIOD OF TIME CAN RESULT IN HEADLAMP SWITCH FAILURE, CAUSING THE HEADLAMPS OR PARK LAMPS TO GO OUT. IF THE LIGHTS FAIL, A VISIBILITY PROBLEM COULD OCCUR, INCREASING THE RISK OF A VEHICLE CRASH.
REMEDY: DEALERS WILL REPLACE THE HEADLAMP SWITCH INCLUDING A RELAY IN THE PARK LAMP WIRING CIRCUIT. OWNER NOTIFICATION IS EXPECTED TO BEGIN DURING SPRING OF 1999. OWNERS WHO DO NOT RECEIVE THE FREE REMEDY WITHIN A RESONABLE TIME SHOULD CONTACT CHRYSLER AT 1-800-992-1997.

FORD RECALL NO. 99S01/ NHTSA NO. 99V028
FORD AEROSTAR MINI VAN 1994-1995
MANUFACTURE JUNE-AUGUST 1994
DEFECT: HEAT GENERATION IN THE WIRING HARNESS TO THE FUEL PUMP/SENDER ASSEMBLY CAN CAUSE AN ELECTRICAL SHORT. THE VEHICLE COULD EXPERIENCE A LOSS OF POWER AND BECOME IMMOBILIZED, AND THE FUEL GAUGE MAY BE ERRATIC. HEAT DAMAGE, INCLUDING MELTING OR CHARRING OF THE FUEL PUMP AND SENDER ASSEMBLY WIRE HARNESS AND ASSOCIATED WIRING HARNESSES CAN RESULT. THE SHORT CIRCUIT ALSO HAS THE POTENTIAL TO CAUSE A VEHICLE FIRE.
REMEDY: DEALERS WILL INSTALL A FUSED JUMPER HARNESS IN THE FUEL PUMP GROUND CIRCUIT THAT WILL BE INSTALLED AT THE FUEL PUMP INERTIA SHUT-OFF SWITCH. (cont)

RECALLS

OWNER NOTIFICATION IS EXPECTED TO BEGIN DURING MARCH 1999. OWNERS WHO DO NOT RECEIVE THE FREE REMEDY WITHIN A RESONABLE TIME SHOULD CONTACT FORD AT 1-800-392-3673.

FORD SAFETY RECALL 99S02/NHTSA NO. 99V029
FORD MOTOR COMPANY HAS DETERMINED THAT A DEFECT WHICH RELATES TO MOTOR VEHICLE SAFETY EXISTS IN ALL 1992 THROUGH 1997 AEROSTAR VEHICLES.
SAFETY DEFECT: THE AFFECTED VEHICLES WERE PRODUCED WITH A HIGHER THAN SPECIFIED ELECTRICAL LOAD THROUGH AN ACCESSORY POWER CIRCUIT THAT CONNECTS TO THE IGNITION SWITCH. OVER TIME, THIS OVERLOAD CONDITION COULD CREATE A SHORT-CIRCUIT RESULTING IN OVERHEATING OF ELECTRICAL COMPONENTS IN THE STEERING COLUMN AND POTENTIALLY A VEHICLE FIRE. A SMOKE ODOR OR A POPPING NOISE FROM THE STEERING COLUMN MAY FOREWARN THE OPERATOR. UPON TURNING THE KEY OFF, THE SHORT IS ELIMINATED.
REPAIRS: AT NO CHARGE TO YOU, YOUR DEALER WILL RE-ROUTE THE ACCESSORY POWER CIRCUIT THROUGH A RELAY. DEALERS CURRENTLY HAVE INSTRUCTIONS AND PARTS ORDERING INFORMATION.

IF THE DEALER DOESN'T MAKE THE REPAIR PROMPTLY AND WITHOUT CHARGE, YOU MAY CONTACT THE FORD CUSTOMER ASSISTANCE CENTER, 16800 EXECUTIVE PLAZA DRIVE, P.O. BOX 6248, DEARBORN, MICHIGAN 48121. YOU ALSO MAY SEND A COMPLAINT TO THE ADMINISTATOR, NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION, 400 SEVENTH STREET, S.W., WASHINGTON, D.C. 20590 OR CALL THE TOLL FREE AUTO SAFETY HOTLINE 1-800-424-9393 (WASHINGTON, D.C. AREA MAY CALL 366-0123).

FORD RECALL 98S37/NHTSA RECALL NO.98V322
FORD CROWN VICTORIA 1990-1999
LINCOLN TOWN CAR 1990-1999
MANUFACTURE MARCH 1996- DECEMBER 1998
DEFECT: ON CERTAIN POLICE, FLEET, NATUAL GAS, AND LIMOUSNE VEHICLES, THE ONE-PIECE BEARING WITHIN THE LOWER CONTROL ARM BALL JOINT CAN WEAKEN SLOWLY DURING USE AND EVENTUALLY CRACK. THIS COULD RESULT IN SEPARATION OF THE BALL AND CAP OF THE JOINT, ALLOWING THE CONTROL ARM TO DROP TO THE GROUND. IF THIS OCCURS WHILE THE VEHICLE IS MOVING, REDUCED STEERING CONTROL COULD OCCUR, INCREASING THE RISK OF A CRASH.
REMEDY: DEALER WILL REPLACE THE LOWER CONTROL ARM BALL JOINTS. OWNER NOTIFICATION BEGAN JAN. 18, 1999. OWNERS WHO DO NOT RECEIVE THE FREE REMEDY WITHIN A REASONABLE TIME SHOULD CONTACT FORD AT 1-800-392-3673.

RECALLS

GENERAL MOTORS RECALL NO. 98065/ NHTSA NO. 99V025
CHEVROLET C10 TRUCK 1994
CHEVROLET C20 TRUCK 1994
CHEVROLET C30 TRUCK 1994
CHEVROLET C3500 TRUCK 1994
CHEVROLET SUBURBAN 1994
GMC C15 TRUCK 1994
GMC C25 TRUCK 1994
GMC C35 TRUCK 1994
GMC C3500 TRUCK 1994
GMC SUBURBAN 1994
MANUFACTURE MARCH 1993- SEPTEMBER 1994
DEFECT: THESE VEHICLES WERE BUILT WITH THE POLARITY OF THE WIRING FOR THE BRAKE SWITCH REVERSED FROM WHAT WAS SPECIFIED ON THE SWITCH DRAWING. WITH THE REVERSED POLARITY, THE CONTACTS IN THE BRAKE SWITCH CAN WEAR OUT PREMATURELY. THE BRAKE SWITCH WILL PERFORM NORMALLY UNTIL THE BRAKE SWITCH CONTACTS WEAR OUT, RESULTING IN LOSS OS THE BRAKE LAMPS WITHOUT ANY WARNING TO THE DRIVER. THIS WOULD FAIL TO WARN A FOLLOWING DRIVER THAT THE VEHICLE IS BRAKING AND COULD LEAD TO A CRASH.
REMEDY: DEALER WILL REPLACE THE BRAKE SWITCH AND REVERSE THE WIRING. OWNER NOTIFICATION IS EXPECTED TO BEGIN DURING MARCH 1999. OWNERS WHO DO NOT RECEIVE THE FREE REMEDY WITHIN A REASONABLE TIME SHOULD CONTACT CHEVROLET AT 1-800-222-1020 OR GMC AT 1-800-462-8782.

GENERAL MOTORS RECALL NO. 98071/ NHTSA NO. 99V009
CHEVROLET ASTRO 1996-1998
GMC SAFARI 1996-1998
MANUFACTURE MAY 1996-SEPTEMBER 1997
DEFECT: MINIVANS EQUIPPED WITH INTEGRATED CHILD SEATS. SOME OF THESE VEHICLES MAY BE MISSING A SEAT BELT RETRACTOR CLUTCH SPRING AND OR PAWL SPRING IN THE CHILD SEAT. IF THE CLUTCH SPRING WAS MISSING, THE SEAT BELT WOULD LOCK IN THE RETRACTED POSITION AND COULD NOT BE USED. IF THE PAWL SPRING WAS MISSING, THE SEAT BELT RESTRAINT WOULD CONTINUALLY PLAY OUT AND NOT LOCK. THESE CONDITIONS COULD INCREASE THE OCCUPANT'S RISK OF INJURY IN THE EVENT OF A VEHICLE CRASH.
REMEDY: DEALER WILL INSPECT THE SEAT BELTS ON THE CHILD SEAT, AND IF NECESSARY, REPLACE THE CHILD SEAT. . OWNERS WHO DO NOT RECEIVE THE FREE REMEDY WITHIN A REASONABLE TIME SHOULD CONTACT CHEVROLET AT 1-800-222-1020 OR GMC AT 1-800-462-8782.

MAINTENANCE ADVISORY MESSAGE (MAM)
TACOM-WRN CONTROL NO. MAM-99-004

High Mobility Wheeled Vehicle (HMMWV) Model number M966, M998, M1025, M1026, M1035, M1036, M1037, M1038, and M1042.
THREE POINT SEATBELT CONVERTION KITS
Some Units are ordering individual repair parts instead of Modification Work Order (MWO) 9-2320-280-35-2, 3-Point seatbelt restraint system kit. This maintenance advisory message (MAM) is issued to discourage Units contemplating such MWO application. Not all MWO kit parts, specifically the reinforcement plates, are available through the regular supply system. These reinforcement plates are only available as part of the MWO kit. The reinforcement plates must be added to the body of the vehicle prior to seatbelt MWO kit installation and are essential to ensure the integrity of the seatbelt system in the event of an accident. Because the reinforcement plates cannot be ordered separately the MWO cannot be installed correctly unless the entire MWO kit is used. High Mobility Multi-Purpose Wheeled Vehicle (HMMWV) Electronic Technical Manuals (ETMS) are contained on CD EM 0030, 1 JULY 1997. However, the NSN depicted in MWO 9-2320-280-35-2, DTD 1 JUNE 1996, for the front seatbelt kit, listed on Page 3, Paragraph 8.1.A, is in error.
The correct information is as follows:

NSN	NOMENCLATURE	CAGE	PN
2540-01-387-4018	3-Point Seatbelt Retrofit Kit Front seat, non armor	19207	57K0202

Any Unit's vehicles, which have been converted to the 3-Point Seatbelt configuration without the use of the entire MWO kit, should be brought back to the original vehicle configuration.
Three point seatbelt kits will be available.
POC
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TACOM –WRN CONTROL NO 99-03 AIR DRYER
NSN 4440-01-407-5135, USED ON M35A3, SERIES CARGO TRUCKS, FOR 2 1/2TON TACTICAL VEHICLES
TWO AIR DRYERS, USED ON M35A3 SERIES TRUCKS HAVE EXPLODED. THE AIR DRYERS WERE FOUND TO HAVE ICE INSIDE OF THEM, CAUSING BLOCKAGE. SUSPECT PROPER PREVENTIVE MAINTENANCE CHECKS AND SERVICES WAS NOT PERFORMED BEFORE SHUT DOWN OF THE ENGINE. AFTER OPERATION CHECK AND LISTEN TO MAKE SURE THE MOISTURE EJECTIOR, EJECTS AIR OUT THE EXHAUST PORT BEFORE SHUTTING THE ENGINE DOWN.

SAFETY OF USE MESSAGE
TACOM #99-07

SAFETY OF USE MESSAGE (SOUM), TACOM-WRN CONTROL NO. 99-07, TECHNICAL, FOR ALL M998 SERIES HIGH MOBILITY MULTIPURPOSE WHEELED VEHICLES (HMMWV) EXCEPT XM1109, M1114, AND M1097 WITH ARMOR KIT EQUIPPED WITH THE DISTRIBUTION BOX NSN 6110-01-446-7126.

PROBLEM:

A. VEHICLES EQUIPPED WITH THE DISTRIBUTION BOX, NSN 6110-01-446-7126, WHICH WAS INSTALLED WITH KIT NSN 6110-01-446-7125, HAVE A POTENTIAL TO CRANK OVER ON THEIR OWN AFTER THE VEHICLE HAS BEEN STOPPED AND THE RUN SWITCH TURNED OFF.

B. TACOM HAS RECEIVED REPORTS OF VEHICLES WITH A PHANTOM OR SELF CRANK PHENOMENON THAT ALLOWS THE VEHICLE TO CRANK OVER ON ITS OWN APPROXIMATELY 2.5 MINUTES AFTER THE VEHICLE IS SHUT DOWN. THE DEGREE OF CRANKING CAN VARY FROM AN AUDIBLE CLICK TO A CONTINOUS CRANKING OF THE STARTER. A NEWER VERSION OF THE DISTRIBUTION BOX (LABELED "14.0") CORRECTS THE SELF CRANK PHENOMENON, BUT WE HAVE REPORTS WHERE THE STARTER IMMEDIATELY ENGAGED UPON CONNECTING THE BATTERY CABLE OR ENGINE HARNESS CONNECTOR.

C. IF THE STARTER CRANKS ON ITS OWN, IT CAN CONTINUE UNTIL THE BATTERIES ARE DISCONNECTED, DRAINED OF POWER, OR THE STARTER OR WIRING HARNESS SHORTS OUT. SHOULD THE STARTER OR WIRING HARNESS SHORT OUT WHILE SELF CRANKING, THERE IS A POTENTIAL FOR THE VEHICLE TO CATCH FIRE AND BE DESTROYED. IF THE STARTER IMMEDIATELY ENGAGES WHEN CONNECTING THE BATTERY CABLE, A SIGNIFICANT SPARK CAN OCCUR LEADING TO POSSIBLE BATTERY EXPLOSION AND INJURY TO PERSONNEL.

USER ACTIONS:

A. INSPECT YOUR SUBJECT VEHICLES TO DETERMINE IF ANY ARE EQUIPPED WITH THE DISTRIBUTION BOX NSN 6110-01-446-7126, WHICH WAS INSTALLED WITH KIT NSN 6110-01-446-7125. THE DISTRIBUTION BOX IS LOCATED UNDER THE LEFT SIDE DASH BOARD ABOVE THE BRAKE PEDAL. DETERMINING IF THE VEHICLE IS EQUIPPED WITH THE DISTRIBUTION BOX CAN BE DONE BY RAISING THE HOOD AND LOOKING FOR TWO CANNON PLUG CONNECTORS, INSTEAD OF ONE, NEXT TO THE WINDSHIELD WASHER RESERVOIR. IF THE VEHICLE IS EQUIPPED WITH A DISTRIBUTION BOX TAG THE VEHICLE FOR EASE OF IDENTIFICATION AND AS REQUIRING THE FOLLOWING OPERATOR AND MAINTENANCE PERSONNEL ACTIONS.

B. OPERATORS: AS LONG AS THE VEHICLE IS EQUIPPED WITH A DISTRIBUTION BOX, ANY TIME THE VEHICLE IS PARKED AND UNATTENDED POWER MUST BE DISCONNECTED BETWEEN THE STARTER AND THE BOX. THIS CAN BE ACCOMPLISHED BY RAISING THE HOOD AND DISCONNECTING THE ENGINE HARNESS CANNON PLUG, NEAREST TO THE WINDSHIELD, FROM THE DISTRIBUTION BOX. OPERATORS NEEDING ASSISTANCE LOCATING THE CORRECT PLUG OR PROPER PROCEDURES FOR REMOVING AND INSTALLING THE PLUG SHOULD CONTACT UNIT MAINTENANCE PERSONNEL.

C. MAINTENANCE PERSONNEL: ANYTIME THE VEHICLE BATTERY CABLE IS DISCONNECTED, THE ENGINE HARNESS CANNON PLUG MUST BE DISCONNECTED AT THE DISTRIBUTION BOX, PRIOR TO RECONNECTING THE BATTERY CABLE. THIS IS DONE BY RAISING THE HOOD AND DISCONNECTING THE ENGINE HARNESS CANNON PLUG, NEAREST TO THE WINDSHIELD, FROM THE DISTRIBUTION BOX. NOTE THAT THIS IS IN CONFLICT WITH THE NORMAL PROCEDURES LISTED IN THE TECHNICAL MANUAL; HOWEVER ADHERENCE TO THESE ALTERNATE PROCEDURES IS REQUIRED DUE TO THE NATURE AND POTENTIAL HAZARDS POSED BY THE DEFECTIVE DISTRIBUTION BOXES.

D. TOOLS ARE NOT REQUIRED FOR THE INSTALLATION OR REMOVAL OF THE CANNON PLUG. APPLY MODERATE DOWNWARD PRESSURE TO THE CONNECTOR SHELL WHILE HAND TIGHTENING WILL ENSURE PROPER SEATING OF THE CONNECTOR AND ELECTRICAL CONTACTS. PERSONNEL MUST NOT BE WORKING IN OR AROUND THE ENGINE COMPARTMENT WHEN CONNECTING THE ENGINE HARNESS CANNON PLUG.

E. IF THE STARTER ENGAGES WHILE CONNECTING THE ENGINE HARNESS CANNON PLUG THE DISTRIBUTION BOX IS DEFECTIVE AND MUST BE REPLACED.

F. WHILE DISCONNECTED BOTH THE CANNON PLUG AND THE RECEPTACLE MUST BE PROTECTED FROM MOISTURE OR DIRT CONTAMINATION. ADDITIONALLY, CARE MUST BE TAKEN NOT TO ALLOW THE PIN SOCKETS, IN THE PLUG, TO CONTACT ANY METAL SURFACES. IF THIS HAPPENS DAMAGE TO THE PIN SOCKET, PLUG ASSEMBLY, OR VEHICLE ELECTRICAL SYSTEM WILL RESULT. THE USE OF CLOTH TAPE OR PLASTIC ZIP TYPE BAGGIE CAN PROVIDE ADEQUATE PROTECTION AGAINST THIS.

G. DO NOT ATTEMPT TO OVERCOME THE SELF CRANK PHENOMENON BY PLACING THE TRANSMISSION SHIFT LEVER IN GEAR. THE NEUTRAL START SAFETY SWITCH WILL "NOT" PREVENT THE SELF CRANKING BECAUSE OF ITS LOCATION WITHIN THE ELECTRICAL SYSTEM RELATIVE TO THE CAUSE.

H. UNTIL THE FINAL CORRECTIVE ACTION HAS BEEN IMPLEMENTED, DURING ANY MAINTENANCE ACTIONS, MAINTENANCE PERSONNEL MUST DISCONNECT THE BATTERIES AND THE ENGINE HARNESS CANNON PLUG, AT THE DISTRIBUTION BOX, TO PREVENT DAMAGE TO OTHER SERVICEABLE COMPONENTS OR THE DISTRIBUTION BOX. UPON COMPLETION OF THE MAINTENANCE ACTION RECONNECT THE BATTERIES FIRST AND THE ENGINE HARNESS CONNECTOR LAST.

PM ACTIONS:

TACOM WILL BE CONDUCTING A RECALL OF ALL THE DISTRIBUTION BOXES. THE BOXES WILL BE REPLACED WITH AN UP-GRADE VERSION 14A BOX. AT THIS TIME UNITS ARE ASKED TO RETAIN ALL FAILED DISTRIBUTION BOXES FOR RETURN/EXCHANGE ONCE THE RETROFIT REPLACEMENT PLAN HAS BEEN DEFINED. DETAILS OF THE RETROFIT REPLACEMENT PROGRAM WILL BE PUBLISHED IN A FOLLOW ON MESSAGE.

TACOM #99-01

GROUND PRECAUTIONARY MESSAGE, TACOM-WRN CONTROL NO. 99-01, DOLLY SET,NSN 2330-01-378-9997, LIN D34883

PROBLEM:

A. FIELD REPORTS INDICATE THAT THERE ARE CRACKS IN THE WELD AREAS WHERE THE VERTICAL TUBES COVERING THE POSITIONING CYLINDERS MEET THE TOP AND BOTTOM BEAMS OF THE FRONT AND REAR STRUCTURAL FRAME SECTIONS ON THE SUBJECT DOLLY SETS. REFERENCE TM9-2330-390-14&P DATED APRIL 1996, FIGURE 20, ITEM 12, NSN'S 2510-01-426-2433 AND 2510-01-393-5087, AND ITEM 39, NSN'S 2510-01-393-5868 AND 2510-01-393-5744.

B. THE CRACKS RANGE FROM MINOR SURFACE CRACKS WHICH JUST AFFECT THE PAINT AND GALVANIZED COATING, TO STRUCTURAL CRACKS WHICH GO INTO THE WELDS AND TUBING MATERIAL. THE CAUSE OF THE CRACKS HAS NOT BEEN DETERMINED.

USER ACTIONS:

A. USERS AT THE UNIT LEVEL ARE REQUIRED TO CAREFULLY VISUALLY INSPECT THESE WELD AREAS FOR CRACKS. THIS MUST BE DONE PRIOR TO THE NEXT USE OF THE DOLLY SETS. CLEAN THE AREA TO BE INSPECTED TO REMOVE ANY MUD OR OTHER DEBRIS.

B. VISUAL INSPECTION DEADLINING CRITERIA:

(1) CRACKS GREATER THAN ONE INCH LONG EMANATING FROM ANY CORNER.

(2) CRACKS GREATER THAN TWO INCHES LONG BETWEEN THE

CORNERS.

(3) TOTAL CRACKING GREATER THAN EIGHT INCHES AT ANY ONE LOCATION; FOR EXAMPLE, WHERE THE RIGHT VERTICAL TUBE COVERING THE POSITIONING CYLINDER IS WELDED TO THE TOP BEAM IS CONSIDERED ONE LOCATION.

C. IF VISUALLY OBSERVED CRACKS DO NOT EXCEED ANY OF THE ABOVE CRITERIA THE DOLLY SET ARE CONSIDERED SAFE FOR CONTINUED USE. THE CRACKS MUST BE CHECKED BEFORE EACH OPERATION TO DETERMINE IF THEY ARE STILL WITHIN THE ABOVE CRITERIA. RECOMMEND THE ENDS OF THE CRACKS BE MARKED WITH BLACK OR WHITE PAINT FOR EASIER MONITORING OF THE CRACK.

D. IF VISUALLY OBSERVED CRACKS EXCEED ANY OF THE ABOVE CRITERIA, THE DOLLY SET IS DEADLINED AND MUST BE REPAIRED.

E. A REPAIR KIT CONSISTING OF BOLT-ON BRACKETS HAS BEEN DEVELOPED TO REINFORCE CRACKED JOINTS AND GET THE DOLLY SET BACK INTO SERVICE. THESE REPAIR KITS ARE INTENDED ONLY FOR THOSE JOINTS WHERE THE CRACKS EXCEED THE DEADLINE CRITERIA. IT TAKES APPROXIMATELY 15-20 MINUTES TO INSTALL A SET OF BRACKETS. INSTALLATION INSTRUCTIONS WILL BE OVERPACKED WITH THE KITS. COMMON HAND TOOLS AND A PNEUMATIC OR ELECTRIC DRILL ARE REQUIRED FOR INSTALLATION. RECOMMEND KITS BE INSTALLED AT THE DIRECT SUPPORT (DS) LEVEL.

F. FURTHER TESTING AND EVALUATION ARE BEING CONDUCTED TO DETERMINE IF THE BRACKETS SHOULD BE APPLIED TO ALL EIGHT JOINTS ON THE DOLLY SET REGARDLESS OF EXTENT OF THE CRACK. TESTING IS EXPECTED TO BE COMPLETED IN MID JUNE AND A DECISION ON KIT APPLICATION ACROSS THE BOARD BY EARLY JULY.

G. TO OBTAIN THE REPAIR KITS REQUEST YOU PROVIDE THE FOLLOWING INFORMATION, PREFERABLY BY E-MAIL, TO KLISZE@TACOM.ARMY.MIL; SHIPPING ADDRESS, NUMBER OF KITS REQUIRED, POINT OF CONTACT INCLUDING TELEPHONE NUMBER. KITS WILL BE DIRECT SHIPPED FROM THE CONTRACTOR.

TACOM #98-029

MAINTENANCE ADVISORY MESSAGE (MAM), TACOM-WRN CONTROL NO. MAM-98-029, PRESSURE DIFFERENTIAL SWITCHES, PART NUMBERS 13229E006-1 AND -2, FOR 3,000 GPH ROWPU, KECO MODEL ROWPU-1, NSN 4610-01-371-1790.

THE ROWPU MANUFACTURER (KECO) HAS DISCOVERED THAT THE PRESSURE DIFFERENTIAL SWITCHES FOR THE BASKET STRAINER AND CARTRIDGE FILTER (PART NUMBER 13229E006-1) AND THE MEDIA FILTER (PART NUMBER 13229E006-2) CAN BECOME CLOGGED WITH A SALT RESIDUE AND BECOME INOPERATIVE. THE MANUFACTURER IS CURRENTLY LOOKING FOR A REPLACEMENT SWITCH FOR RETROFIT.

UNIT LEVEL ACTIONS:

A. CHECK THE ROWPU IMMEDIATELY FOR ANY OF THE FOLLOWING CONDITIONS:

(1) BASKET STRAINER LIGHT IS ON AND BASKET STRAINER IS CLEAN, OR LIGHT IS NOT ON AND STRAINER IS PLUGGED.

(2) MEDIA FILTER PLUGGED LIGHT IS ON AT A DIFFERENTIAL PRESSURE LESS THAN 20 PSIG, OR NOT ON AT A PRESSURE GREATER THAN 30 PSIG.

(3) CARTRIDGE FILTER PLUGGED LIGHT IS ON AT A DIFFERENTIAL PRESSURE LESS THAN 12 PSIG, OR IS NOT ON AND DIFFERENTIAL PRESSURE IS GREATER THAN 20 PSIG.

B. IF ANY OR ALL OF THESE CONDITIONS EXIST, THE PRESSURE DIFFERENTIAL SWITCH(ES) MAY BE CLOGGED. OBSERVE WARNING AND PERFORM THE FOLLOWING PROCEDURE:

MAKE SURE ELECTRICAL POWER IS DISCONNECTED BEFORE WORKING ON UNIT. MAKE SURE AIR PRESSURE IS VENTED FROM MANIFOLDS BEFORE WORKING ON SWITCHES. THERE MAY BE SOME RESIDUAL PRESSURE TRAPPED IN THE PRESSURE SWITCH AS A RESULT OF THE CLOGGED ORIFICES. BE SURE TO WEAR EYE PROTECTION WHEN PERFORMING THIS PROCEDURE.

(1) LOOSEN OR REMOVE FITTINGS AND LINES TO GAIN ACCESS TO THE TWO SIDE (NOT BOTTOM) INLET ORIFICES OF THE DIFFERENTIAL SWITCHES.

(2) CLEAR ORIFICES OF DEBRIS BY FIRMLY INSERTING AN INSTRUMENT APPROXIMATELY 1/8 INCH IN DIAMETER OR SMALLER (E.G. DRILL BIT, SCREW DRIVER, ALLEN WRENCH) INTO EACH OF THE TWO ORIFICES. USE A TWISTING MOTION TO HELP BREAK UP THE CLOG. SHAKE OUT LOOSE PARTICLES.

(3) ONCE THE ORIFICES ARE CLEAN, FLUSH WITH CLEAN WATER AND COAT THE INSIDE OF THE PRESSURE SWITCH INLETS WITH SILICONE LUBRICANT.

(4) REINSTALL AND/OR TIGHTEN ALL FITTINGS AND LINES.

C. IF PROBLEM PERSISTS AFTER CLEANING THE SWITCH, NOTIFY DIRECT SUPPORT MAINTENANCE.

FREIGHTLINER INTRODUCES ON-LINE DRIVER MAINTENANCE MANUALS

FREIGHTLINER CORP. HAS UNVEILED THE LATEST IN ITS ARRAY OF SOFTWARE AND INTERNET OFFERINGS: ON-LINE DRIVER AND MAINTENANCE MANUALS. NOW, FREIGHTLINER CUSTOMERS CAN USE THE INTERNET TO ACCESS INFORMATION ON OPERATING AND MAINTAINING FREIGHTLINER, STERLING, AMERICAN LaFRANCE AND FREIGHTLINER CUSTOM CHASSIS CORP. VEHICLES. THE ON-LINE MANUALS ARE AVAILABLE IMMEDIATELY AT: www.alliancesupport.com, THE WEB SITE OF FREIGHTLINER'S ALLIANCE PARTS AND SERVICE DIVISION. TO REACH THE MANUALS, USERS SHOULD CLICK ON "TECHNICAL INFORMATION" UNDER THE "INFORMATION SYSTEMS" HEADING. NO PASSWORD IS REQUIRED AND ACCESS IS FREE. FREIGHTLINER'S ON-LINE MANUALS CONTAIN THE ENTIRE TEXT OF THE COMPANY'S PRINTED DRIVER AND MAINTENANCE MANUALS, ALONG WITH HUNDREDS OF DRAWINGS AND SCHEMATICS.

HMMWV

CRANKCASE DEPRESSION VALVE

When the pressure gets too much for your HMMWV or CUCV, something's got to give. A clogged crankcase depression regulator valve (CDRV) on a HMMWV or CUCV, or a plugged up oil filler cap on your CUCV, lets pressure build in the crankcase. What gives are the oil pan and valve cover gaskets and crankcase seals, which can lead to a blown engine.

The CUCV oil filler cap is easy to test. Take it off and shake it. If it rattles, it's OK. If it doesn't, replace it. Do this every time it's in for a Preventive Maintenance (PM) service. Checking the Crankcase Depression Regulator Valve (CDRV) on HMMWV's and CUCV's.

Don't wait, if you see oil on the engine or on the ground after the truck's been running or if you see blue exhaust smoke. Those signs tell you the CDRV is probably clogged. Repairmen, use a manometer to test the HMMWV's CDRV for two to five inches of vacuum at 2,000 rpm. If the CDRV flunks, replace it with NSN 2990-01-147-9284 for the HMMWV. There is no test for the CUCV's CDRV. If you suspect it's bad, replace it, NSN 2990-01-147-9284.

Check the CDRV connectors and hoses, too. If they are loose or the hoses have holes, dirt will plug the CDRV. Tighten or replace them if necessary.

TRANSFER CASE SHIFTING

If your HMMWV's transfer grinds when you try to shift it with the engine running, this information is for you.

DRIVERS

- When a transfer range change is necessary during operation or while the engine is running, stop the truck and shift the transmission to neutral.

Shift the transfer shifter forcefully through neutral to the desired range. Some gear clash may occur and is normal, but you should be able to make the shift easily.

- If you can't, turn the engine off and then shift the transfer. Restart the engine and continue the mission.
- Let your maintenance shop know that you had to stop the engine to shift the transfer.

MECHANICS

When transfer shifting problems are reported, check the engine idle rpm before troubleshooting .

The amount of gear clash can be related to engine speed and to the length of time the transfer is left in neutral with the engine running.

Once the idle is adjusted, shift the transfer to see if it made any difference. If not, troubleshoot the transfer.

BRAKE HOSE REPLACEMENT

The two flexible brake hoses shown in the parts manual are not the right ones to use on A2-series HMMWV's.

Until the manual is updated, note these four different NSNs are replacements for Item 14, fig134, and Item 21, fig 135:

Fig 134 (front brakes)	Fig 135 (rear brakes)
NSN 4720-01-443-3033 (left hand)	NSN 4720-01-443-3481 (left hand)
NSN 4720-01-442-9875 (right hand)	NSN 4720-01-443-8487 (right hand)

BRAKE LIGHT

When a HMMWV's brake warning light stays on after you release the parking brake, something's wrong. But, before you replace any parts, try bleeding the brake lines. Since air in the brake lines will keep the light on, good parts and your valuable time can be wasted trying to turn out that light.

If the light stays on after bleeding, use the troubleshooting info starting on Page 2-319 of TM 9-2320-280-20-1.

If the proportioning valve is the culprit, replace it.

When you replace the proportioning valve, follow the word in Para 7-18 of TM 9-2320-280-20-2, and add a light coat of lube, NSN 9150-00-273-2389, to the connector pins. That heads off corrosion.

Never try to save a bad valve by taking it apart and adjusting it. Any tampering ruins the calibration set at the factory.

MOVE HMMWV MIRROR

Want to lower the west coast mirror on the driver's side of your HMMWV because it blocks out too much of your forward vision? Get your mechanic to order and install mirror kit, NSN 2540-01-424-7363. The kit contains a new mirror (that compensates for a lower viewing angle), hardware and instructions on how to relocate the mirror.

STEERING GEAR

The HMMWV Steering Gear used on the Basic and A1 Series vehicles, NSN 2530-01-169-3168 is no longer available. Please order NSN 2530-01-423-1796.This steering gear is the one currently installed on the A2 Series HMMWV's. NSN 2530-01-423-1796 will work on your Basic and A1 series HMMWV's.

ALTERNATORS

This article is to give further guidance concerning the ARMY's new deal family of dual voltage units.

This is to inform NCF/SOU units that there is an alternative to the high cost of doing these conversions at the present time.

FEDERAL PRISON INDUSTRIES currently has a supply, or will rebuild a unit you provide to them at considerable savings.(Example) These single voltage alternators that are common to the Basic and the A1 HMMWV's. NSN 2920-01-264-6542, unit price of $551.00, and 2929-01-190-2709, unit prce of $475.50. They also do starters, transfer cases, transmissions, differentials and many other HMMWV component parts as well as other manufactures equipment repair parts and are increasing their inventory of items all the time.

Locations are as follows:

UNICOR
Cage 4S905
P.O. Box 500
Boron, CA 93516
(760) 762-5602
FAX: 762-5060

UNICOR
Cage OVKZO
100 Prison Rd.
Estill, SC 29918
(803) 625-4607ex4334
FAX: 625-4699

UNICOR
Cage OSEL2
P.O. Box 4100
Three Rivers, TX 78071
(512) 786-3576ex707
FAX: 786-4731

Point of contact is Bill Mauzey, SLC, Code 15D4BEM, DSN 551-1913,
COM: (805) 982-1913.

2 ½ TON TRUCKS

VENT LINE

Give your M44A2 series 2 ½ ton truck a quick check for a separate brake hydraulic vent line in the engine compartment.

The line is attached to the firewall about four inches from the top edge. The line loops over another hose and ends with a bushing. If you must deep water ford, add breather, NSN 4820-00-726-4719, to the bushing.

Without this separate vent line, fuel vapors can contaminate brake fluid, leading to swelling of seals in the brake/air hydraulic cylinder, and brake failure.

Most 2 ½ ton trucks have this modification, but there have been reports that some still don't.

BRAKESHOE SET FOR FLATBED TRAILER, M872A3. 34TON

2530-01-179-7640 is the NSN for the brakeshoe for the M872A3 34ton flatbed trailer. The unit of issue and price has to reflect the fact that we're no longer issuing individual shoes. This item is now being packaged as a set (SE) at a unit price of $67.24. The set includes 2 shoes (with linings) and all of the hardware needed to complete a brake job for one wheel.

SET CONTENTS INCLUDE:

1. 2sleeve bushings
2. 2 straight headless pins
3. 2 linear-rotary rollers
4. 2 brakeshoe roller retainers
5. 4 flatwashers
6. 1 return spring
7. 4 retaining rings

This saves the customer both time and money, since these seven items are also included in the sets and no longer need to be ordered separately from 2 other NICP's.

INTERNATIONAL

1998 Service Letter Index

Subject: Index of 1998 Vehicle Recall, Authorized Field Change (AFC) and Technical Service Information (TSI) Letters

Index of 1998 Vehicle Recall Letters:

Letter Number	Subject File	Topic / Vehicle(s)
G-96505 — 3rd Notice	Brakes	3600, 3800 And 3900FC Bus With Air Brakes And Antilock Brake System / 3600, 3800 And 3900FC Model Buses Built 1/30/92 Through 9/6/96 With Air Brakes And Antilock Brake System, Code 04AZA
G-96508 — 2nd Notice	Rear Axle	Eaton Rear Axle With Axilok Wheel Adjusting Nuts / 2554, 2574, 2654, 2674, 4700, 4800, 4900, 5000, 8100, 8200, 9200, 9300, 9400 And 9800 Models Built 4/16/96 Through 10/16/96 With Eaton Rear Axle Housings With A Date Code Prior To HU 0605XXX Or P 0605XXX
G-97502 2nd Notice	Brakes	1652 SC, 3400, 3800, 4600, 4700 And 3000 RE Buses With 9x3 Powered Applied Parking Brake / 1652 SC, 3400, 3800, 4600, 4700 And 3000 RE Buses Manufactured From 1/1/91 Through 6/15/96
G-97503 2nd Notice	Wheels	5000, 9200, 9300, and 9400 Series With Six Spoke Rear Wheels / 5000, 9200, 9300, and 9400 Built Between July 15, 1996 And January 3, 1997, With Six Spoke Rear Wheels
G-97505 2nd Notice	Engine	Electronic Accelerator Pedal Rod 3800 Bus And 4700 FBC Chassis With T 444E Engine / 3800 Bus And 4700 FBC Chassis Built 12/16/96 Through 3/10/97, With the T 444E Engine And Electronic Accelerator Pedal
AmTran Corp. G-98301	Electrical	Headlamp Circuit Protection / Genesis And AmTran RE Buses

Index of 1998 Vehicle Recall Letters: (continued)

Letter Number	Subject File	Topic / Vehicle(s)
AmTran Corp. G-98302	Steering	Adjustable Steering Column Pinch Bolt Nut GENESIS And AmTran RE Buses / The Vehicles Involved Are GENESIS And AmTran RE Units Built From April 6, 1998 Through May 27, 1998
AmTran Corp. G-98304	Wheels	5 Spoke Rear Wheel Assemblies On AmTran RE And Genesis Buses / The Vehicles Involved Are AmTran RE And Genesis Buses Built From September 1, 1997 Through September 17, 1998
AmTran Corp. G-98305	Cab	Emergency Door Hinges / AmTran RE And Genesis Buses Built Through October 18, 1996; Ward/AmTran Volunteer Buses Built February 24, 1988 Through October 18, 1996; Ward Senator Buses Built January 5, 1990 Through January 1, 1992; Ward Patriot Buses Built February 24, 1988 Through December 31, 1990; Ward/AmTran Vanguard Buses Built February 24, 1988 Through October 18, 1996; Ward President Buses Built January 5, 1989 Through October 30, 1990
G-98501	Brakes	Air Compressor Discharge Line On Caterpillar C10 And C12 Engines On 9100 And 9200 Series Vehicles / 9100 And 9200 Series With Caterpillar C10 And C12 Engines Built From 4/9/96 Through 11/20/97
G-98502	Electrical	Sleeper Compartment HVAC On 9200, 9300, 9400, And 9800 Pro Sleeper® Models / 9200, 9300, 9400, And 9800 Pro Sleeper® Models. The Build Dates For The 9000 Model Conventional Trucks Are From 5/1/97 To 4/1/98 And The Build Dates For The 9800 Cabovers Are 7/1/97 To 5/8/98
G-98503	Transmission	Double Neutral Shift Control Lever On Models With Allison AT545 Automatic Transmissions / 1652 SC, 3400, And 4700 Models With An AT545 Allison Automatic Transmission Built From 1/1/94 Through 7/1/97
G-98504	Wheels	AKW RECALL – 22.5 x 8.25 15-Degree Tubeless One-Piece Aluminum Dual Wheels
G-98505	Front Axle	12,000 lb. Fabco Front Drive Axles / 4800 4x4s And 4900 6x6s With 12,000 lb. Fabco Front Drive Axles Built From 4/1/92 Through 4/1/95
G-98506	Brakes	3800, 4700 And 4900 Series Vehicles With A 1710 Series Driveline And A 12x4 Parking Brake / 3800, 4700, And 4900 Model Vehicles Built 7/1/97 Through 7/31/98 With A 1710 Driveline And A 12x4 Driveline Parking Brake

Letter Number	Subject File	Topic / Vehicle(s)
G-98507	Engine	All Models With T 444E Engine / All Models Built From 12/23/97 Through 8/14/98 With A T 444E Diesel Engine. Engine Serial Numbers Starting With 661894 To 802224
G-98508	Propeller Shaft	9100, 9200, 9300, And 9400 With Spicer SPL170 Driveline / 9100, 9200, 9300, And 9400 Series Vehicles With A Spicer SPL170 Driveline With A 55mm Diameter Stub End And A Center Bearing And Built From 10/7/96 Through 9/16/98
G-98509	Engine	All Models With T 444E Engine / All RE, 1652, 3400, 3600, 3800 And 4700 Models Built From 1/2/97 Through 11/7/97 With A T 444E Diesel Engine. Engine Serial Numbers Involved Are 460195 Through 634234.

Index of 1998 Authorized Field Change (AFC) Letters:

Letter Number	Subject File	Topic / Vehicle(s)
G-96908 / Revision 1 — 2nd Notice	Cab	Misaligned Spot Welds / 2000, 4000, 8000 Models
G-98901	Brakes	Bendix AD-9 Air Dryer Upgrade / All Models With Holset (Cummins) Type EOVEQ Compressor Built Between October 1, 1996 And December 31, 1997
G-98902	Frame	9300 Model Frame/Ride Improvement / 9300 Pro Sleeper® With CabMate Air Suspension, Behind The Cab Fuel Tank, 234 Inch Or Longer Wheelbase and Built Between May 1, 1997 And November 13, 1997
G-98903 — Revised (Replaces G-98903) with Notice #1	Engine	Poor Cold Startability Of DT 466E Engines With Navistar Single Box Engine Control Module (ECM) / Vehicles Built From November 1, 1997 Through May 1, 1998 With DT 466E Engines And Navistar Single Box Engine Control Module (ECM)
G-98904	Engine	Engine Road Draft Tube Extension / AmTran 3000RE Bus With V8 Engine Built Prior To April 28, 1998 With A 12 Inch Road Draft Extension Or No Road Draft Extension

Index of 1998 Technical Service Information (TSI) Letters:

Subject File	Letter Number	Topic / Vehicle(s)
Frame	— — —	(No Letters)
Front Axle	— — —	(No Letters)
Springs	94-03-02RA (Replaces TSI-94-03-02R, TSI-94-03-02 and TSI-93-03-03)	Ride Height Dimensions And Air Spring Height Dimensions / All With International, Hendrickson And Neway Air Suspension
	97-03-01RB (Replaces TSI-97-03-01RA, TSI-97-03-01R, TSI-97-03-01 and TSI-92-03-03)	Steer Axle And Vari-Rate Spring Bushings And Pins – Wear Limits / 3000, 3900FC, 4000 Models And All Models With Vari-Rate Rear Suspension
	98-03-01	Rear Air Suspension Codes 03SAS, 03SAT, 03SAU, 03SAW With Upper Bracket Location Error / 4700LP Model Built Between 1996 And March 5, 1998
	98-03-02	Steer Axle Suspension With Threaded Pin/Bushing Wear Limits / 5000, 8000, 9000 Models
	98-03-03	2-Stage Steer Axle Springs With Shock Absorbers / 5000SFA Model Built After January 1994
	98-03-04	Air Suspension Mounting Holes Removed From Frame Rails / 91/92/93/94/9900 Models With International® Air Suspension And 12.5 Inch Air Spring Height Built December 1, 1998 And Later
Brakes	98-04-01R (Replaces TSI-98-04-01)	Next Generation ECU For Antilock Brake Systems (ABS) / All Models Manufactured With Wabco ABS Effective February 2, 1998 And Bendix ABS Effective March 1, 1998
	98-04-02	Elimination Of Key And Keyway In Air Compressor Gear For Bendix Tu-Flo 550 And 750 Air Compressors / All Models With International® DT 466/DT 466E And 530/530E Engines
Steering	— — —	(No Letters)
Propeller Shaft	— — —	(No Letters)
Exhaust System	— — —	(No Letters)
Electrical	98-08-01	Disconnecting Electrical System / All Models

Subject File	Letter Number	Topic / Vehicle(s)
	98-08-02	Command Center With Trip Odometer Option Having Symptoms Of Display Flicker/Errors, Speedometer/ Tachometer Pointers Frozen Or Registered Miles Lower Than Actual / 9100, 9200, 9300, 9400 Models With Electronic Trip Odometer Option And Command Center Built Before Date Code 0798
	98-08-03	Replacing Terminal Pins On The Single Engine Controller (ECM) Chassis Harness Connector / All Models With An International® Engine And Single Engine Controller (ECM)
	98-08-04	Detroit Diesel Series 60 Engine Overlay Harness / 96/97/9800 Models Built Before January 1, 1998 With DDECII and DDECIII Systems
	98-08-05	Year 2000 Compliance With International® Trucks / All International Models With Electronic Control Modules
Front End Sheet Metal	98-09-01	Hood/Fender Repair, Fender Section Replacement / 9200 And 9400 Models After July 1996, And 9100 Models After March 1997
General	— — —	(No Letters)
Clutch	98-11-01	Clutch Engagement Noise With Eaton Spicer Angle-Ring 350MM Clutches / All
	98-11-02	Clutch Linkage Upgrade / 91/92/93/9400 Models Built Between September 1, 1998 And July 3, 1998
Engine	98-12-01	Release Of 88°C (190°F) Coolant Thermostat / All Models With DT 466, International® 530, DT 466E And International® 530E
	98-12-02	Releasing New And Revised Components For The Flywheel Housing Used On All T 444E Diesel Engines
	98-12-03	Engine Wire Dress Cover Service Kits / All Models With International® DT 466E, 530E And T 444E
	98-12-04	Crankshaft/Flywheel Alignment Dowel Pin / All Models With T 444E
	98-12-05	1. Late 1997 Model Year Component Changes For The International® T 444E Engine 2. 1998 Model Year Component Changes For The International® T 444E Engine
	98-12-06	Releasing New Skeleton And Stripped Service Engines For 1998 Model Year International® T 444E
	98-12-07	Radio Frequency Interference Service Kit / All Models With International® DT 466E And 530E

Index of 1998 Technical Service Information (TSI) Letters: (continued)

Subject File	Letter Number	Topic / Vehicle(s)
Engine (cont.)	98-12-08	Releasing New Cylinder Head Oil Rail End Plug And Seal Package / All Models With International® T 444E
	98-12-09	New Engine Control Module (ECM) In Service Parts For The International® DT 466E And 530E Engines With ECM 3-Box System Mounted On Cab Cowl
	98-12-10	Assembling Two Piece (Articulated) Piston Used On The International® 530 And 530E Engines Rated @ 300HP And Above
	98-12-11	Release Of 24 Volt Navistar Engine Electronic Control Module / International® DT 466E And 530E
	98-12-12	Intake Valve Stem Chrome Plating For The International® DT 408, DT 466/DT 466E And 530/530E Engines
	98-12-13	Poor High Altitude Cold Starting Of The DT 466E And International® 530E Diesel Engines Equipped With The New DiamondLogic® Engine Control Module (ECM)
	98-12-14	Cummins N-14 Engine With Poly-V Fan Belt Run Off / 91/92/93/9400 Models Built After July, 1996 With Cummins N-14 Engine And Poly-V Fan Belt
	98-12-15	The DiamondLogic® Engine Control Module (ECM) Control Software Calibration May Cause An Engine Surge When The Engine Is Operated Under A Light Load Or In The 1000-1300 RPM Range Or Both / The Engine Surge Condition Affects All International® T 444E Diesel Engines, Equipped With The DiamondLogic ECM, Having Serial Numbers Ranging From 634234 Through 748353
	98-12-16	No International "Technical Service Information" Letter Released Using This Number
	98-12-17	No International "Technical Service Information" Letter Released Using This Number
	98-12-18 (Replaces TSI-97-12-18)	In Chassis Cleaning Procedure For Vehicle Cooling Package / AmTran 3000RE Bus
	98-12-19	1999 Model Year Feature And Component Changes For The International® DT 466E And 530E Electronically Controlled Engines
Transmission	98-13-01	Automatic Transmission Shift Cable Boot/Seal Retrofit / All Models With Cable Actuated Automatic Transmission

Subject File	Letter Number	Topic / Vehicle(s)
Rear Axle	98-14-01	Excessive End Play In Input Shaft On Spicer N And S Series Rear Axles / 2000, 5000, 8000, 9000 Models With Spicer N Series Rear Axle Codes 14GDA And 14GDC Built From June, 1997 Thru June, 1998 And Spicer S Series Rear Axle Code 14GDE Built From February, 1997 Thru June, 1998
Fuel Tanks	98-15-01	Fuel Tank Sender And Sender Cover Plate Gaskets / 2/4/8/9000 Models With Steel Fuel Tanks Built Between November 1995 And June 4, 1998
Cab	98-16-01	Retrofitting A Current Production International I6 Mechanical Engine Service Cab/Glider To Support A Non-Production Three Module Engine Control System / 2/4/8000 Models With International I6 Or V8 HEUI Engines Built Before November 3, 1997
	98-16-02	Cabmate, Air Suspension, Transverse Locating Rod Bushings With Premature Wear In Pro Sleeper Models / 9000 Conventional Pro Sleeper Models Built May 1997 And Later
	98-16-03	Water Migration Into Alternators In 3600 Model School Bus / 3600 Model School Bus
	98-16-04	Air/Hydraulic Cab Assist Pump In 9800 Models / 9800 Models With Code 16989 Air/Hydraulic Cab Assist Pump Built Between March 3, 1996 And September 11, 1998
Wheels	— — —	(No Letters)

Subject: Glow Plug Relay Service Package

A new glow plug relay designed for extended service part life, is released for the T 444E engine. The new glow plug relay Part No. **1831646C1** replaces the current relays, Part Nos. **1825908C2, 1807230C2** and **1825931C2**. Also available is a field service conversion package Part No , **1826634C94**. An adapter wire (furnished in the package with a drawing) is required to connect the new relay to the engine electrical harness.

IMPORTANT – Be sure to follow the instructions furnished with the package.

Glow Plug Relay Package, **1826634C94** includes the parts listed in Glow Plug Relay Package Contents (See Table 1, page 1).

Table 1 Glow Plug Package Contents

Qty	Description	Part No
1	Glow Plug Relay	1831646C1
1	Adapter Wire Assembly	1825897C1
1	Relay Terminal Insulator	1826707C1
1	Tie–Wrap	1805436C1
1	Instruction Drawing	117172R2

CATERPILLAR®

Retaining Ring Service Kit Available for Accumulators

5077, 4263

12G (61M),
130G (74V),
140G (72V),
14G (96U),
16G (93U) Motor Graders;
776 (14H) Tractors;
777 (84A) Off-Highway Trucks

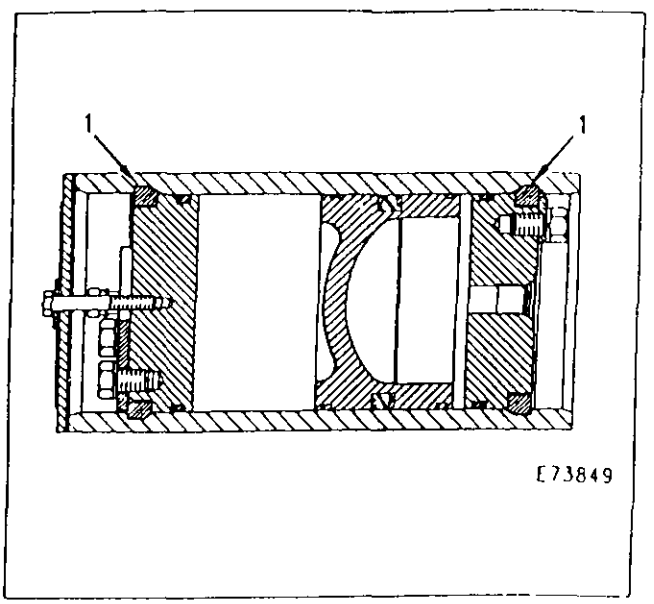
9J 4018 and 9J 4019 Retaining Rings (no longer serviced) are replaced with 149-3251 Retaining Ring Service Kit (1) for caps in accumulators for cushion blade attachment or brake systems for the following machines.

Cushion Blade Attachment

12G (61M)
130G (74V)
140G (72V)
14G (96U)
16G (93U) Motor Graders

Brake System

776 (14H) Tractors;
777 (84A) Off-Highway Trucks



Typical Accumulator
(1) 149 3251 Retaining Ring Service Kit

Manual Adjustment of Transmission Neutralizer Switch Improves Component Service Life and Reduces Operator Fatigue

3191, 4269-ZS

988F (8YG), 988F Series II (2ZR), 992D (7MJ) Wheel Loaders

Description Of Change: In high cycle applications such as truck loading, an operator typically uses throttle lock to maintain high engine speeds. This improves rimpull and hydraulic response. Normally, the operator uses the left brake/neutralizer pedal to control ground speed and divert energy to the hydraulic system while digging.

The transmission neutralizer is factory set to activate when the brake pressure reaches 792 kpa (115 psi). However, this can be too high in some applications. Ideally, the neutralizer should activate at the lowest break pressure required for a customer's application. Neutralizing early with less pressure on the brakes increases axle, brake, and tire life. This also reduces the force required by the operator to depress the pedal, thus reducing leg fatigue.

Adaptable To: The manual adjustment of the transmission neutralizer switch is adaptable to 988F (2ZR1-Up, 8YG1-Up) and 992D (7MJ1-Up) Wheel Loaders by following the adjustment procedure below.

Transmission Neutralizer Switch Brake Pressure Adjustment Procedure

The transmission Electronic Control Module (ECM) requires two input signals before the transmission is allowed to neutralize. First, the transmission ECM needs a 792 kpa (115 psi) signal from the 129-4143 or 4E-4456 Brake Pressure Switch. Second, the 9X-4232 Neutralizer Limit Switch needs to be closed. This confirms the brake pedal has physically moved. When both of these conditions are met, the transmission will neutralize. The transmission will reengage after the 9X-4232 Neutralizer Limit Switch is open and the brake pressure is 516 kpa (75 psi). In order to adjust this system, perform the following procedure.

⚠ WARNING

Personal injury or death can result from escaping fluid under pressure.

Escaping fluid under pressure, even a very small pin-hole size leak, can penetrate body tissue and cause serious injury and possible death. If fluid is injected into your skin, it must be treated immediately by a doctor familiar with this type of injury.

Always use a board or cardboard when checking for a leak.

⚠ WARNING

Sudden movement of the machine or release of oil under pressure can cause injury to persons on or near the machine.

To prevent possible injury, perform the procedure that follows before testing and adjusting the hydraulic system.

NOTICE

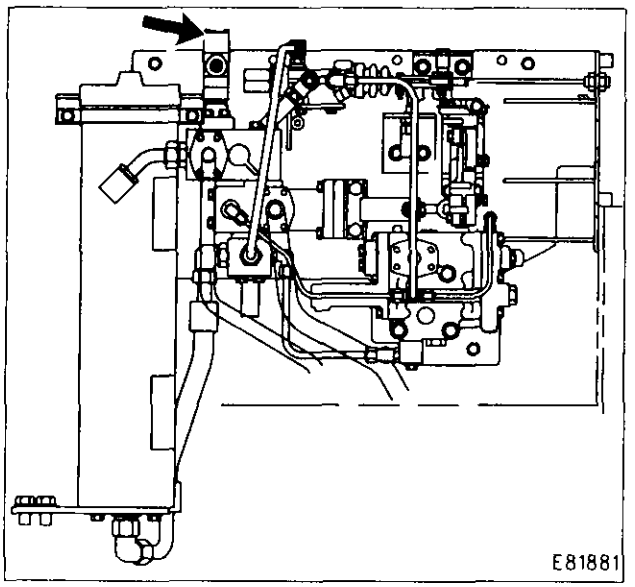
Care must be taken to ensure that fluids are contained during performance of inspection, maintenance, testing, adjusting and repair of the machine. Be prepared to collect the fluid with suitable containers before opening any compartment or disassembling any component containing fluids.

Refer to Special Publication, NENG2500, "Caterpillar Tools and Shop Products Guide", for tools and supplies suitable to collect and contain fluids in Caterpillar machines.

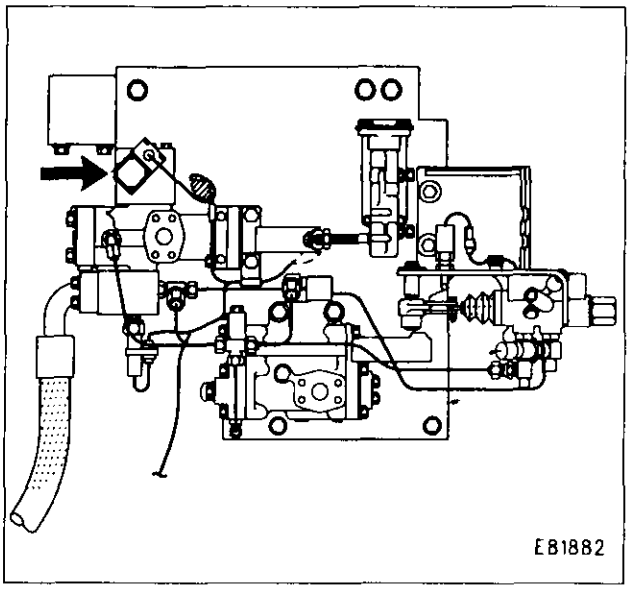
Dispose of all fluids according to local regulations and mandates.

1. Park the machine on a smooth, level surface. Move away from other operating machines and away from personnel. Lower the bucket and/or attachments to the ground. Stop the engine.
2. Permit only one operator on the machine. All other personnel should be kept away from the machine.
3. Engage the parking brake. Lower the bucket or attachment to the ground. Put blocks in front of the wheels, and put blocks behind the wheels.
4. Install the steering frame lock link.

5. In order to relieve any brake oil pressure, push on the brake pedal many times. In order to relieve any steering oil pressure, move the steering control lever several times in all directions.
6. Relieve all of the pressure in the hydraulic oil tank for the steering and brake system. Locate the breaker relief valve. The breaker relief valve is mounted on the top of the hydraulic oil tank for the steering and brake system. Locate the plunger that is on the top of the breaker relief valve. Press and hold down the plunger. Another way to relieve pressure in the hydraulic oil tank is to slowly loosen the filler cap.
7. Be sure you remove all of the oil pressure in both the steering system and the brake system before adjusting any fittings, hoses, or components.



Location of 4E-4521 or 129-4143 Brake Pressure Switch for 988F (8YG) and 988F Series II (2ZR) Wheel Loaders.



Location of 4E-4521 or 129-4143 Brake Pressure Switch for 992D (7MJ) Wheel Loaders.

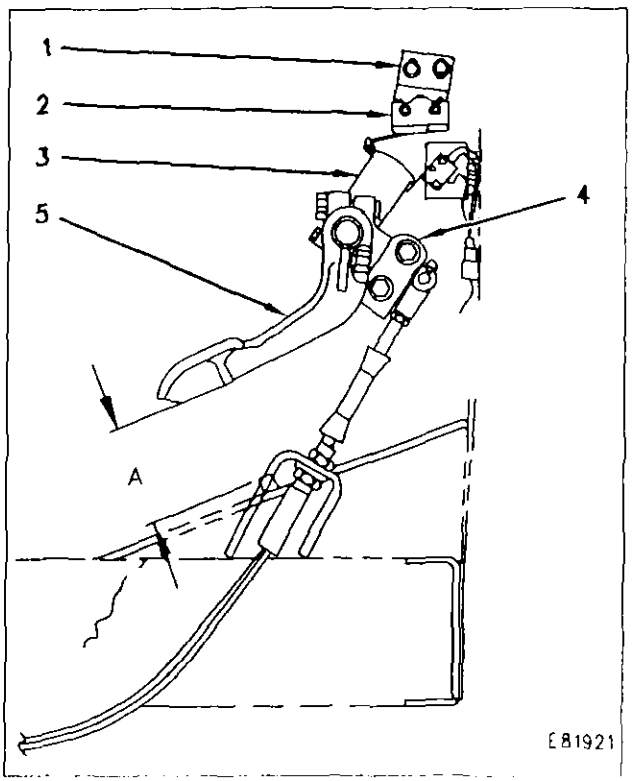
8. Remove 129-4143 or 4E-4456 Transmission Neutralizer Pressure Switch.
9. Install one 5H-4019 Cover.

Note: When the transmission neutralizer pressure switch is removed, the transmission ECM (by default) only needs the 9X-4232 Neutralizer Limit Switch to be closed before neutralizing the transmission. No electrical errors will register.

10. Attach a 6890 kpa (1000 psi) gauge to monitor wheel brake pressure.
11. Toggle the neutralizer lockout switch to the OFF position. When this switch is ON, the transmission will not neutralize when the 9X-4232 Switch closes.
12. Start the machine and allow enough time for the brake system to recharge.
13. Engage the transmission in first speed forward, and while the machine is moving, slowly depress the left brake pedal.
14. Monitor the brake pressure as the transmission neutralizes.

Note: For truck loading applications, experience has shown that 551 kpa (80 psi) is desirable.

Note: The maximum allowable brake pressure is 4823 kpa (700 psi). For more accuracy a 2067 kpa (300 psi) gauge can be used if the brake pedal is not fully depressed.



Neutralizer Limit Switch
(1) 125-8242 Plate. (2) 9X-4232 Limit Switch Assembly. (3) 125-8245 Lever. (4) 9K-4929 Angle Assembly. (5) 125-8249 Brake Pedal. (A) 82.6 ± 1.5 mm (3.25 ± .06 in).

15. To adjust 9X-4232 Limit Switch Assembly (2) turn the machine off and apply the parking brake.
16. Adjust 9X-4232 Switch (2) as needed and repeat Steps 13-15 until the desired pressure is achieved.

Note: The transmission neutralizer override switch still works after this modification and can be used whenever neutralization is not desired by the operator.

■

Correction to Disassembly and Assembly Manual SENR5729-02

0374, 4008-012

988F (8YG), 988F Series II (2ZR) Wheel Loaders

Reference: Service Manual Module, SENR5729-02, Disassembly and Assembly, 988F Wheel Loader and 988F Series II Wheel Loader, Power Train; Page 165, "Final Drive, Brake and Wheel - Install".

The torque value in Step 8 is incorrect. The correct torque value for the bolts should be 1000 ± 125 N•m (735 ± 90 lb ft).

■

Improved Radiator Cores Now Available

1353

D8R (7XM, 9EM), D9R (7TL, 8BL) Track-Type Tractors

Description Of Change: New radiator cores have improved resistance against blasting. The rear row of tubes are now made of Cu-Ni replacing the brass tubes on the fan side (the tube row opposite the direction the vent tubes face). Use of the alloy and thicker tubes results in ten times more resistance to blasting than brass tubes.

Improved Radiator Cores		
Model	**Current Part No.**	**New Part No.**
D8R	113-9539	163-4064
	109-3622	163-4063
	124-7506	163-4062
	124-7505	163-4061
D9R	6I-2432	163-4060
	6I-2433	164-4059
	125-3943	163-4058
	125-3944	163-4057

Adaptable To: The new radiator cores are adaptable to all D8R (9EM1-Up, 7XM1-Up) and D9R (8BL1-Up, 7TL1-Up) Track-Type Tractors.

■

Fuel Level Senders Improved To Prevent Open Circuit Conditions

1273-UN, 1408-UN, 7481

D8N (5TJ1-Up, 7TK1-Up),

Reference: Service Magazine; March 10, 1997; Page 2; "New Fuel Tanks And New Fuel Level Senders Provide More Accurate Readings"

Reference: Service Magazine; April 10, 1995; Page 8; "New Fuel Level Senders Now Used For Models Equipped With A 9X-3496 Fuel Level Gauge"

Reference: Service Magazine; October 31, 1994; Page 5; "New Fuel Level Senders Now Used For Models Equipped With A 9X-3496 Fuel Level Gauge"

Description Of Change: The sensor-dials resistive elements in the fuel level senders have been improved internally to prevent intermittent or open conditions.

Adaptable To: The 138-0444, 139-8661, 139-8662, 139-8663, 139-8665, and 139-8666 Sensor-Dials in the Fuel Level Sender Assembly have been improved effective with date code D97 (D = April, 97 = 1997) at the supplier. The improvement can also be noted by checking the part number marked on the top of the complete sender assembly. The change level of the new sender has been marked after the part number. Senders made before the improvement DO NOT have the change level marked after the part number. The part numbers of the improved Sensor-Dials and the part numbers of the former Sensor-Dials are also shown in Chart 1.

The location of the sensor-dial is shown in Illustration 1. To check effectivity for the machine being serviced, and to find the correct Fuel Level Sender Assembly part number and improved Sensor-Dial part number, refer to Chart 2. This is a partial list of effective serial numbers because not all effective serial numbers are known at this time. As a reference, the sensor-dial will read approximately 64 to 255 ohms at the empty position and 0 to 29 ohms at the full position (varies depending on part number-see Chart 3) when using the Caterpillar 6V-7070 Multimeter or equivalent. Typically, the sensor-dial is all that needs to be replaced on a malfunctioning sender assembly.

Chart 1 - Fuel Level Sensor Replacement

Sensor-Dial Part Number	Former Sensor-Dial Part Number
139-8661	112-9863
159-0647	139-8662
139-8663	136-2094
139-8665	126-9023
139-8666	128-7934
138-0444	116-4759

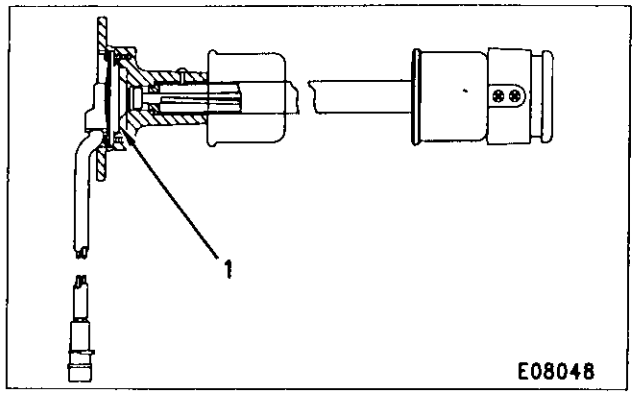


Illustration 1: Typical Sensor-Dial location (1).

Chart 2 - Fuel Level Senders

Sales Model Number	Effective Serial Number	Sender Part Number	Sensor-Dial Part Number
D6H	*	118-0689-03	139-8661
D6R	2YN452, 3ZN516, 4MN433, 5LN767, 8LN444, 9ZS431, 2HM464, 1RW426, 4FM444, 6MR459, 4JR423, 7GR460, 6GR456, 4WR421, 7DR423, 9BM481, 6JN418, 8XN419, 7KN430, 9MN427, 4HN419, 8TM469, 9PN602	113-9478-02	138-0444

* Not Available.

Chart 2 - Fuel Level Senders (continued)			
Sales Model Number	Effective Serial Number	Sender Part Number	Sensor-Dial Part Number
D7H	*	118-0690-03	139-8661
D7R	2HR704, 9HM542, 4SR542, 3ZR656, 5MR421, 2EN469, 3DN244	120-9586-02	138-0444
D8N	*	118-0690-03	139-8661
D8R	9EM501, 7XM1922	118-0690-03	139-8661
950F Series II	5SL2982, 8TK4977, 6LL118, 4DJ3641, 2LM913	107-1846-02	139-8666
960F	9ZJ0464, 4CL461, 6XL384, 1YM204	107-1849-02	139-8666
966F Series II	1SL2515, 9YJ3972, 6ML117, 8BG3307	122-0237-03	139-8661
970F	7SK861, 9JK726, 7PL273	122-0237-03	139-8661
980G	2KR1307, 9CM677, 2SR398	115-2086-05	139-8663
980F Series II	*	124-8227-02	139-8665
992G	*	113-9477-03	138-0444
953B	*	118-0691-03	139-8661
953C	2ZN1055	118-0691-03	139-8661
963B	9BL1974	118-0690-03	139-8661
973	86G3289	118-0692-03	139-8661
515	*	136-1617-01	138-0444
525	1DN1175	136-1617-01	138-0444
814F	*	115-2086-05	139-8663
824G	*	121-3174-04	139-8663
815F	*	115-2086-05	139-8663
816F	*	115-2086-05	139-8663
825G	*	121-3174-04	139-8663
826G	*	121-3174-04	139-8663
613C	*	115-8504-03	139-8661
615C	*	115-8502-03	139-8661
621F	4SK591	115-8505-03	139-8661
623E	*	115-8503-03	139-8661
623F	*	115-8503-03	139-8661
627F	*	115-8505-03	139-8661

* Not Available.

Chart 2 - Fuel Level Senders (continued)			
Sales Model Number	Effective Serial Number	Sender Part Number	Sensor-Dial Part Number
12H	4XM1-1147, 2WR1-565, 2GS1-301, 8MN1-461	120-9588-02	159-0647
14H	7WJ1-474	124-0288-02	159-0647
16H	6ZJ1-237	124-0287-02	159-0647
120H	4MK1-286, 9FN1-337, 2AN1-81, 9YR1-271	120-9588-02	159-0647
135H	3YK1-203	120-9588-02	159-0647
140H 75 Gal. Tank	2ZK1-1716, 9ZN1-150, 3AS1-401, 9TN1-121	120-9588-02	159-0647
140H 120 Gal. Tank	2ZK1-1716, 9ZN1-150, 3AS1-401, 9TN1-121	126-6903-02	159-0647
143H 90 Gal. Tank	1AL1-301	120-9588-02	159-0647
143H 120 Gal. Tank	1AL1-301	126-6903-02	159-0647
160H 90 Gal. Tank	9EJ1-419, 2HS1-351, 3GM1-51	120-9588-02	159-0647
160H 120 Gal. Tank.	9EJ1-419, 2HS1-351, 3GM1-51	126-6903-02	159-0647
163H 90 Gal. Tank	5AK1-119	120-9588-02	159-0647
163H 120 Gal. Tank	5AK1-119	126-6903-02	159-0647

* Not Available.

Chart 3 Sensor-Dial Part Numbers		
Sensor P/N	Empty Resistance (ohms)	Full Resistance (ohms)
139-8661	92 to 98	0 to 3.5
159-0647	239 to 255	25 to 29
139-8663	92 to 98	0 to 3.5
139-8665	64 to 68	0 to 3.5
139-8666	81 to 86	0 to 3.5
138-0444	92 to 98	0 to 3.5

■

Correct Seal Usage Improves Service Life

7555

All Caterpillar Machines

Some earlier Caterpillar machines built in the 1970's and early 1980's used metal backed seals with tubes, hose couplings and fittings. Later, new tubes, hose couplings and fittings were introduced. The new tubes, hose couplings and fittings were designed to use rectangular seals and O-rings. The rectangular seals and O-rings provide better sealing than the metal backed seals.

Metal backed seals will not fit in components designed to use rectangular seals or O-rings. Rectangular seals or O-rings may fit in components designed to use metal backed seals, however, they WILL NOT adequately seal components designed to use metal backed seals, particularly under high pressure.

Note: Components designed to use metal backed seals do not have grooves necessary to prevent rectangular seals or O-rings from distorting under pressure.

Metal backed seals are no longer serviced. Some earlier Caterpillar machines may still be equipped with tubes, hose couplings and fittings designed to use metal backed seals. These earlier tubes, hose couplings and fittings should be replaced with new components that either use rectangular seals or O-rings.

Note: Disregard NPR information that calls for rectangular seals or O-rings as direct replacements for metal backed seals. DO NOT use rectangular seals or O-rings to replace metal backed seals in components designed to use metal backed seals.

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Recoil Seal Guard Prevents Leaks

4151 **D8N (9TC, 5TJ, 1XJ),**

Description Of Change: Use the 8T-5071 Seal Guard when you replace recoil seals or when you assemble the front track roller frame into the rear track roller frame. The seal guard protects the seal to prevent seal damage, track roller frame leaks, and track roller frame failures.

Adaptable To: Use the seal guard when you install the following recoil seals on the listed Track-Type Tractors.

Recoil Seals	
Model	Part Number
D4H, D5M	9X-4578
D5H, D6M	9X-4580
D6H, D6R	9X-4582
D7H, D7R, D8N, D8R	9X-4584
D8L, D9N, D9R	9X-4586
D9L, D10N, D10R	9X-4588
D11N, D11R	9X-4590

■

New O-Ring Seals And New Idler Shaft Now Used

1234

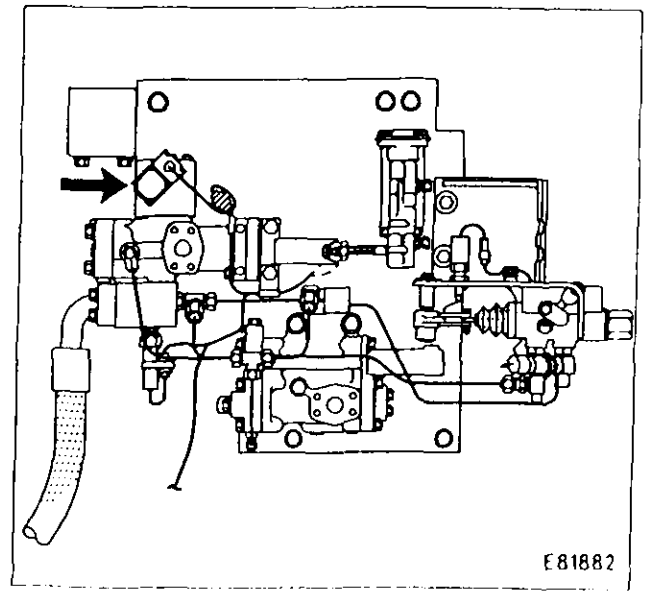
988F (8YG) Wheel Loaders

Description Of Change: New o-ring seals for the idler gear bolts and idler gear shafts are now being used in the above applications powered by 3408 engines. The seals that are used on the internal idler gear shafts and bolts have been redesigned in order to provide increased engine oil control. The new idler gear shaft that is being used will help to prevent fretting of the rear housing.

Adaptable To: The 6V-4365 O-Ring Seals (5) for the bolts on the gear are now being used in place of the former 4J-5309 O-Ring Seals. The 124-1859 O-Ring Seals (4) for the shaft on gear are now being used in place of the former 2H-6338 O-Ring Seals.

The 8L-2777 O-Ring Seals (3) for the bolts on the gear are now being used in place of the former 4J-9535 O-Ring Seals. The 124-1858 O-Ring Seals (2) for the shaft on the gear are now being used in place of the former 7F-8268 O-Ring Seals.

The new 122-9860 Idler Gear Shaft (1) replaces the 106-1541 Idler Gear Shaft in the 4P-3581 Rear Gear Group.



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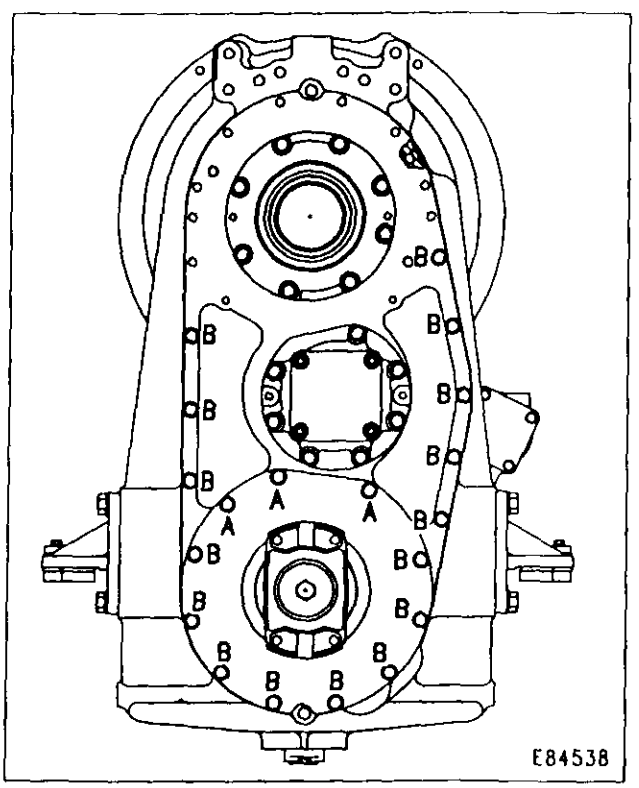
Longer Bolts and Spacers Used On Output Transfer Case & Gear Group

3159

834B (7BR, 92Z) Wheel Tractors; 836 (3RL, 7FR) Landfill Compactors; 988F (8YG), 988F Series II (2ZR) Wheel Loaders

Description Of Change: Three bolts that help hold the bearing cage onto the transfer case assembly have been replaced by three longer bolts and three spacers. The torque for the three new bolts (A) and existing bolts (B) has increased from 105 ± 20 N•m (75 ± 15 lb ft) to a torque of 135 ± 20 N•m (100 ± 15 lb ft). The three longer bolts and higher bolt torque will reduce oil leaks between the transfer case and cover assembly.



Transfer Case and Gear Group

Adaptable To: Three 0S-1587 Bolts (A) replace three former 7B-3235 Bolts. Three new 170-7309 Spacers and three 5P-8245 Washers are used with 0S-1587 Bolts (A). The new bolts and bolt torque are effective with the transmissions listed in the Table and adaptable to first production for the machines listed.

Effectivity			
Model	Transfer Case & Gear Group	Transmission Arrangement	Serial
988F (8YG)	6Y-5843	3Q-6397	1DY686-Up
988F Series II (2ZR)	6Y-5843	3Q-6988	3CY774-Up
988F (8YG), 988F Series II (2ZR)	6Y-5843	6Y-6719	1SX3379-Up
988F (8YG), 988F Series II (2ZR)	6Y-5843	106-3291	7TX708-Up
988F Series II (2ZR)	6Y-5843	147-7629	4SY818-Up
834B (7BR, 92Z)	126-3372	1Q-4830	4HX423-Up
834B (7BR, 92Z), 836 (3RL)	126-3372	8E-4905	3MX737-Up
836 (7FR)	126-3372	141-9909	3PY685-Up

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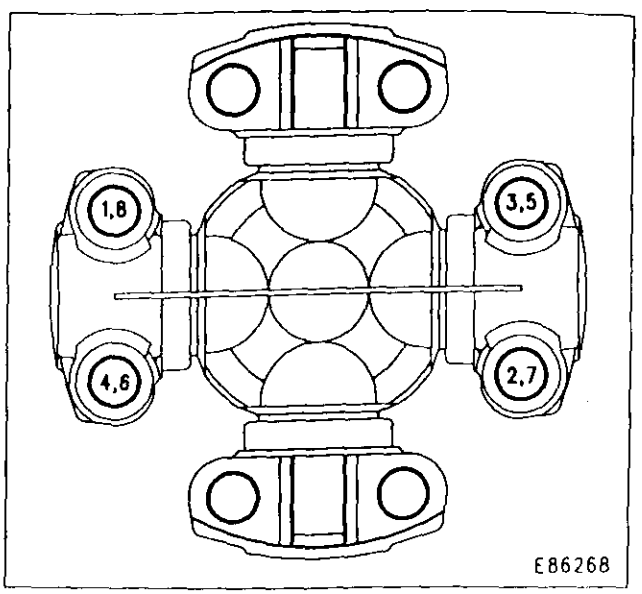
Drive Line Bolt Tightening Procedure

Description Of Change: A new tightening procedure is being used for all drive line bolts. This tightening procedure reduces the incidence of loose bolts due to uneven bolt tightening or difficult drive line component fit-up.

Adaptable To: This new drive line bolt tightening procedure is adaptable to the machines listed. The following tightening procedure should be used for all drive line bolts.



Typical Spider and Bearing Group

1. First tighten the bolts using cross pattern sequence (1, 2, 3, 4). Use a torque wrench that is set to the correct torque. This ensures component fit-up and closes any gaps in the assembly.
2. Tighten the bolts again using cross pattern sequence (5, 6, 7, 8). Use a torque wrench that is set to the correct torque. This ensures even bolt tightening.

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